



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/988,566	11/20/2001	Makoto Okada	1359.1057	8743

21171 7590 01/24/2005

STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER

TRAN, NGHI V

ART UNIT	PAPER NUMBER
----------	--------------

2151

DATE MAILED: 01/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/999,375

Applicant(s)

ODENWALD, LOUIS

Examiner

Glenford Madamba

Art Unit

2151

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☒ Claim(s) 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) filed on October 31, 2001, has been received and considered by the examiner.

Claim Objections

1. The disclosure is objected to because the text on Page 2, Lines 2 & 6 should be updated with the current status of the cited applications, such as the U.S. Patent Application Serial No., a filing date, U.S. Patent No., and the issue date. Appropriate correction is required.
2. Claim 21 is objected to because of the following informality: Claim 21, as written, is self-referencing and is dependent on itself. The examiner has interpreted the Claim to depend on Claim 20, as understood. Appropriate correction is required.

Claim R ejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 2 makes use of a negative claim language "...wherein the host *does not have* dynamic multipathing filter functionality." [Claims Section, Page 40, Line 18]

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 2151

2. Claims 1-22 are rejected as being anticipated by Watanabe et al (hereinafter Watanabe), U.S. Patent 6775230.

3. Claim 1 asserts an apparatus for providing an input/output interface with failover functionality between a host and a target, comprising:

- a first data transfer route suitable for communicatively coupling the apparatus to a host system;

In his invention, Watanabe discloses a system that includes a host and a switch (apparatus) with the switch coupled to the host by a Fibre Channel path.

[Col 2, Lines 46-48]. Further, Figure 2 in Watanabe shows three hosts, 102, 104, and 106, connected to the switch through ports 112, 114, and 118 respectively.

- a second data transfer route suitable for communicatively coupling the apparatus to a target,

Watanabe stipulates a method that includes the establishment of a first path from the plurality of predetermined paths between the computer system and storage system (the target). Watanabe clearly teaches that there are two ports 120 and 122, which connect the switch 110 to the storage system 140 [Col 3, Lines 52-53]. Figure 2 for Watanabe illustrates a switch (apparatus) that is coupled to the target storage system via **port_120**.

- a third data transfer route suitable for communicatively coupling the apparatus to the target;

Watanabe stipulates a method that includes the establishment of a first path from the plurality of predetermined paths between the computer system and storage system (the target). Watanabe clearly teaches that there are two ports 120 and 122, which connect the switch 110 to the storage system 140 [Col 3, Lines 52-53]. Figure 2 for Watanabe illustrates a switch (apparatus) that is coupled to the target storage system via **port_122**.

- a memory suitable for storing electronic data, the memory including a program of instructions; and

Watanabe discloses a system that includes a Fibre Channel network device, or "switch", that includes a processor and *memory* "having software operated on by the processor, the software including a table having the plurality of ports and the path group." [Col 2, Lines 58-64]

- a controller communicatively coupled to the first data transfer route, the second data transfer route, the third data transfer route and the memory, the controller suitable for performing the program of instructions, wherein the

program of instructions configures the controller to transfer data between the host and target utilizing the third data transfer route should the second data transfer route become unavailable.

Watanabe discloses a system that includes a Fibre Channel network device, or “switch”, that includes a *processor* (or controller) and memory “having software operated on by the processor, the software including a table having the plurality of ports and the path group” [Col 2, Lines 58-64]. Figure 2 in Watanabe clearly shows the switch, which includes the controller, connected to each of the hosts (ports 112, 114, or 118) as well as to the target via one of the ports (120 or 122).

Claim 10 is rejected for the same reasons discussed above as it differs from Claim 1 only by its statutory category.

4. Claim 2 states the apparatus as described in claim 1, wherein the host does not have dynamic multipathing filter functionality.

In Watanabe’s invention, FIG. 2 shows an example storage area network of an embodiment of the present invention. There are three hosts 102, 104, 106, i.e., computer systems, connected to a switch 110 through ports 112, 114, and 118 respectively [Col 3, Lines 42-45]. Each host 102, 104, and 106 has at least one Fibre channel path. The hosts may have different Operating System (for example, MVS,

Art Unit: 2151

Unix, Windows, or the like) [Col 3, Lines 57-59]. By the literature's description of the invention, it is noted that none of the hosts identified have dynamic multipathing functionality (DMP) as part of their capabilities.

Claim 11 is rejected for the same reasons discussed above as it differs from Claim 2 only by its statutory category.

5. Claim 3 references the apparatus as described in claim 2, wherein the host, when confronted with multiple routes to a target, views the multiple routes as multiple targets.

Referring to Figure 4 in the application [Odenwald], an embodiment 400 of the present invention is shown wherein a single ported initiator not having dynamic multipathing filter (DMP) functionality is communicatively coupled to multiple ports on a target using a logical identifier. A host, including an input/output interface 402 configured with a single port 404, is coupled to multiple ports 406 of a target 408. In this instance, the host does not have dynamic multipathing filter (DMP) functionality, and thus, would view each path to a target as a separate target [Page 17, Lines 17-23]. Similarly, Watanabe exemplifies the same network configuration/architecture for his embodiment of the invention [Figure 2]. As recited above, the host devices do not possess DMP functionality, and, hence, would view each path to a target as a separate target.

Claim 12 is rejected for the same reasons discussed above as it differs from Claim 3 only by its statutory category.

6. Claim 4 requires the apparatus as described in claim 1, wherein a logical identifier is utilized to access the apparatus by the host.

Referring to Figure 1A, Odenwald illustrates an embodiment 100 of the present invention wherein a logical identifier (LID) format is configured to provide static logical mapping to a target. A host, when providing an identifier 102, may include two 8-bit fields, a bus field 104 and an Id 106. An input/output controller (IOC), upon receiving the identifier 102, shifts the bus field 104 to create a logical identifier (LID) 108 [Page 11, Lines 14-21]. Thus, a linear 16-bit value suitable for indexing is provided which is compatible with a wide variety of bus formats, such as Small Computer System Interface (SCSI) and the like [Page 11, Lines 22-24].

In Watanabe's invention, Figure 2 shows an example storage area network of an embodiment of the invention having three hosts 102, 104, 106, i.e., computer systems, connected to a switch 110 through ports 112, 114, and 118 respectively [Col 3, Lines 42-45]. Each host 102, 104, and 106 has at least one Fibre channel path. The hosts may have different Operating Systems and communicate through the switch 110 (or fabric 12) to the logical volumes 146 by using the Small Computer Systems Interface

Art Unit: 2151

(SCSI) Fibre Channel Protocol (FCP) [Col 3, Lines 57-63]. It is inherent from the system architecture described in Watanabe that equivalent identifiers are in use between the host and the switch (I/O interface), compatible with SCSI bus formats for the proper communicative coupling of the devices.

Claim 13 is rejected for the same reasons discussed above as it differs from Claim 4 only by its statutory category.

7. Claim 5 discloses the apparatus as described in claim 4, wherein the logical identifier is included in a logical identifier table.

Claim 6 states the apparatus as described in claim 4, wherein the logical identifier is associated with a target routing table, the target routing table including a target routing entry indicating a data transfer route between the target and the apparatus.

Odenwald shows a *logical identifier table* and *target routing table* enclosed within the I/O interface in Figure 3C. Odenwald recites that, when used in conjunction, the logical identifier table and target routing table is suitable for describing a data transfer route between a host and a target [Page 17, Lines 6-8]. On the other hand, Watanabe teaches in a specific embodiment that when a switch 110 receives a frame (network packet) from the host 102, it examines both its *routing table* to determine the output port

Art Unit: 2151

and the switch *configuration table* 130 to determine information on the output port such as status and usage [Col 4, Lines 1-6]. The switch configuration table is used to search for an alternative path within the same path group to reroute frames in case a path failure occurs [Col 3 Lines 33-35].

Claim 14 is rejected for the same reasons discussed above as it differs from Claim 5 only by its statutory category.

Claims 15 and 20 are rejected for the same reasons discussed above as it differs from Claim 6 only by their statutory category.

8. Claim 7 asserts the apparatus as described in claim 6, wherein the route includes at least one of world wide node name and world wide port name.

Watanabe provides an example of a configuration table for his invention in Table 1 [Col 4, Lines 7-19]. In it, he points out that the information in Table 1 includes the path's port ID, the World Wide Name (WWN or worldwide unique address) the path group, alternate port and port status [Col 4, Lines 20-24].

Claims 16 and 21 are rejected for the same reasons discussed above as it differs from Claim 7 only by their statutory category.

9. Claim 8 recites the apparatus as described in claim 6, wherein the target routing entry includes a physical address of the target.

Odenwald instructs that the input/output interface 170 may be further configured to associate the LID of each of the target devices 176a-176n to a physical address identifier of each of the target devices 176a-176n. The physical address identifier may be, in one example, an arbitrated loop physical address (AL_PA) or a "D_ID".

Watanabe discloses in his specification that when a host 102, sends a frame, to the storage system 140 through a Fibre channel path which includes switch ports 112 and 120, the frame includes a destination address of the frame: D_ID, which is described in FC-PH.

Claim 17 is rejected for the same reasons discussed above as it differs from Claim 8 only by its statutory category.

10. Claim 9 discloses the apparatus as described in claim 1, wherein the apparatus is communicatively coupled to the target over at least one of a loop and fabric.

Watanabe makes the point that each host 102, 104, and 106 has at least one Fibre channel path. The hosts may have different Operating System (for example, MVS, Unix, Windows, or the like), and they communicate through the switch 110 (or fabric

Art Unit: 2151

12) to the logical volumes 146 by using the Small Computer Systems Interface (SCSI) Fibre Channel Protocol (FCP) [Col 3, Lines 57-60].

Claims 18 and 22 are rejected for the same reasons discussed above as it differs from Claim 9 only by their statutory category.

19. Claim 19 asserts a method for providing a failover function between a host and a target in a network environment by an input/output interface, comprising:

providing a logical identifier table by an input/output interface, the logical identifier table including at least one logical identifier, the logical identifier suitable for referencing at least one physical address identifier of a target; and
managing communications between the host and the target by the input/output interface, the communications occurring over at least one of a first route and a second route of at least two routes communicatively coupling the input/output interface to the target so that the host transfers data utilizing the second route of the at least two routes should the first route of the at least two routes become unavailable.

Claim 24 asserts a *means* for accomplishing the same method.

Art Unit: 2151

Claims 19 and 24 are rejected for the same reasons provided in #7 (for Claim 5) and #9 (for Claim 8), as well as #2 (for Claim 1) above, as it differs from Claims 1, 5, & 9 only by its statutory category.

20. Claim 23 states the method as described in claim 19, wherein the input/output interface includes a controller, the controller suitable for managing the communications.

Claim 23 is rejected for the same reasons provided in #2 (for Claim 1) discussed above, as it differs from Claim 1 only by its statutory category, in terms of having a controller.

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Purcell et al, Patent No. 6389555, exhibits a system and method for maintaining a communications within a computer system after a data transport failure across a first link. Fail-over capability is attained by re-establishing communications across a secondary link using different transport mechanisms. Between two Input/Output Processors (IOPs) within a computer system, such as a server, a series of data transactions between are queued until transaction completion.

Chen et al, Patent No. 5802258, discloses a system for maintaining a non-disruptive connection between a local host and a remote host is introduced that allows the re-establishment of processing communications between the remote host and a new host in case the first host originally in processing communication with the remote host experiences an outage.

Wilson et al, Patent No. 6697875, discloses a system for building and using a network device database. The network includes multiple enclosures, and each enclosure houses at least one device (e.g., a data storage device). The network may be a storage area network, for example. One embodiment of a method for deriving the addresses of all devices of the network includes repeating the following steps for each enclosure of the network. A command is issued to the enclosure requesting information comprising device identifications (IDs) of all devices within the enclosure. A portion of an address of the enclosure is concatenated with each device ID to form the addresses of all devices within the enclosure. The network may include one or more Fibre Channel Arbitrated Loops (FC-ALs).

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Glenford Madamba whose telephone number is 571-272-7989. The examiner can normally be reached on M-F 8:30-5:00.

Art Unit: 2151

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zarni Maung can be reached on 571-272-3932. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


ZARNI MAUNG
SUPERVISORY PATENT EXAMINER

Glenford Madamba
Examiner
Art Unit 2151